

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 December 2003 (18.12.2003)

PCT

(10) International Publication Number
WO 2003/103409 A3

- (51) International Patent Classification⁷: **A23C 7/04**,
A23L 1/015, C12H 1/00, 1/04, A23L 2/70, 2/80
- (21) International Application Number:
PCT/EP2003/006072
- (22) International Filing Date: 10 June 2003 (10.06.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
MI2002A001260 10 June 2002 (10.06.2002) IT
- (71) Applicant (for all designated States except US): **DOX-AL ITALIA S.P.A.** [IT/IT]; Via E. Fermi, 2, I-20050 Correzzana (IT).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **VOLPATO, Ivo** [IT/IT]; Via Cattaneo, 22, I-06070 S. Mariano (IT). **BIZZINI, Bernard** [FR/CH]; Rue du Roc, 65, CH-8100 Albi (CH). **VENERONI, Flavio** [IT/IT]; Via Casatenovo Residence, I-20050 Correzzana (IT).
- (74) Agent: **GERLI, Paolo**; Notarbartolo & Gervasi S.p.A., Corso di Porta Vittoria, 9, I-20122 Milano (IT).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Declaration under Rule 4.17:**
— of inventorship (Rule 4.17(iv)) for US only
- Published:**
— with international search report
- (88) Date of publication of the international search report:
25 March 2004
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: NEW INDUSTRIAL PROCESS FOR FOOD LIQUIDS DECONTAMINATION FROM CHEMICAL AND/OR BIOLOGICAL CONTAMINANTS

(57) Abstract: Procedure for the decontamination of a food liquid from one or more chemical and/or biological contaminants, based on the contact of said liquid with at least a biocompatible membrane, to which antibodies specific for said contaminants are covalently bound.

WO 2003/103409 A3

INTERNATIONAL SEARCH REPORT

International Application No

P 03/06072

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A23C7/04 A23L1/015 C12H1/00 C12H1/04 A23L2/70
A23L2/80

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A23C A23L C12H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, FSTA, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE WPI Section Ch, Week 199343 Derwent Publications Ltd., London, GB; Class B04, AN 1993-340452 XP002253881 -& JP 05 249116 A (UNITIKA LTD), 28 September 1993 (1993-09-28) abstract	1, 9, 23
Y	US 5 998 222 A (WEIMER BART C) 7 December 1999 (1999-12-07) * column 3, line 64 - column 4, line 11; examples 3 and 4; claims 1 and 10 * --- -/--	1-26



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

1 December 2003

Date of mailing of the international search report

22.12.03

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Georgopoulos, N

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/06072

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 693 985 A (DEGEN PETER J ET AL) 15 September 1987 (1987-09-15)	1,8
Y	* column 3, line 9 - column 4, line 11; claims 1, 5, 6, 14, 15, 25, 28, 29, 38 *	1-8
X	US 4 357 311 A (SCHUTT ERNEST G) 2 November 1982 (1982-11-02) * column 1, line 6-19; claims 1, 2, 6 and 7 *	1,2
X	WO 96 27614 A (KLEIN ELIAS ; YEAGER DONALD H (US)) 12 September 1996 (1996-09-12) * page 4, lines 31-35; page 5, lines 5-10; page 7; lines 30-34; claims 1, 3 and 13 *	1,2
X	EP 0 246 643 A (KOPPERS AGRI RES CO ; DNA PLANT TECHN CORP (US)) 25 November 1987 (1987-11-25) * page 2, lines 1-4; page 3, lines 36-39; claims 1, 6, 8, 9; figures 1a and 1b *	1,2
X	US 5 573 921 A (MANNS ANDREAS ET AL) 12 November 1996 (1996-11-12) * column 5, lines 13-18; column 9, line 6 - column 10, line 6; figures 1, 1b and 2; claims 1, 3, 4, 10 and 13 *	1,9,12, 13,19, 23-25
X	ABOUZIED M M ET AL: "Simultaneous screening of fumonisin B1, aflatoxin B1, and zearalenone by line immunoblot: a computer-assisted multianalyte assay system" FSTA, XP002223968	1,2,5,6
Y	* abstract *	9-26
X	JUNG R ET AL: "Strip ELISA for detection of staphylococcal enterotoxins in culture supernatants and foods" FSTA, XP002223990 * abstract *	1,2,5, 8-13,16, 17,19, 23,24
X	LOSSO J N ET AL: "Removal of bovine serum albumin from cow's milk using chicken egg-yolk antibodies immobilized on chitosan gel" FSTA, XP002223969 * abstract *	1,8-10, 18,19

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP 03/06072

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-8

Membrane for decontamination of liquid foods consisting of a biocompatible polymer in the form of woven or non-woven fabric and antibodies specific for the contaminants, said antibodies being covalently linked to said membrane.

2. Claims: 9-22

Decontamination process of liquid foods comprising contacting said foods with a membrane consisting of a biocompatible polymer and antibodies specific for the contaminants, wherein said antibodies are covalently linked to said membrane.

3. Claims: 23-26

Use of membranes of nylon, cellulose, polyesters, polyacrylates, their derivatives or mixtures thereof and antibodies specific for the contaminants, said antibodies being covalently linked to said membranes, for the decontamination of liquid foods.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 03/06072

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 5249116	A	28-09-1993	NONE	
US 5998222	A	07-12-1999	NONE	
US 4693985	A	15-09-1987	CA 1249781 A1	07-02-1989
			DE 3573886 D1	30-11-1989
			DE 3585542 D1	09-04-1992
			EP 0173500 A1	05-03-1986
			EP 0280840 A1	07-09-1988
			GB 2163434 A , B	26-02-1986
			GB 2199327 A , B	06-07-1988
			JP 1963000 C	25-08-1995
			JP 6089169 B	09-11-1994
			JP 61124868 A	12-06-1986
US 4357311	A	02-11-1982	NONE	
WO 9627614	A	12-09-1996	EP 0880544 A1	02-12-1998
			JP 11503005 T	23-03-1999
			WO 9627614 A1	12-09-1996
			US 5766908 A	16-06-1998
EP 0246643	A	25-11-1987	EP 0246643 A2	25-11-1987
			JP 63118657 A	23-05-1988
US 5573921	A	12-11-1996	DE 4229591 C1	24-03-1994